

ePMP™ Force 110

Wireless service providers and enterprises around the globe are challenged to deliver reliable connectivity in overcrowded RF environment. As spectrum increasingly becomes a scarce commodity, finding the right broadband connectivity solution is vital for all low and high density types of deployments.

Cambium Networks resolved this challenge with a breakthrough technology solution that delivers superior performance, resiliency and reach in the most congested environments. ePMP Force 110 high gain integrated solution enhances range and improves throughput in high interference environments. ePMP Force 110 is comprised of ePMP 1000 Connectorized Radio and ePMP 110A-525 Dish. Operating in the 5 GHz frequency spectrum, the solution brings wireless broadband connectivity to customers over longer distances and provides a superior return on investment.

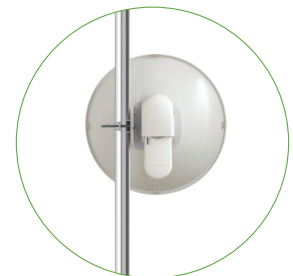
The platform supports bandwidth-intensive services such as VoIP, video and data with high performance and exceptional reliability even in difficult RF conditions. It is the most effective connectivity solution for reaching the under and unconnected around the world.



Force 110 Front



Force 110 Side



Force 110 Back

Features

Cambium Networks' ePMP 1000 Connectorized High Gain Radio is designed to operate in **high interference environments** and provides **superior throughput** of more than **150 Mbps** of real user data.

Flexible Mode of operation ensures robust adaptivity to both symmetrical and asymmetrical traffic while providing **high performance** and exceptionally **low 6 ms latency**.

QoS management offers an outstanding quality for triple play services – VoIP, video and data and provides three levels of traffic priority.

Long deployment range is enabled by **25 dBi** antenna with **30 dBm** of transmit power.

This platform can be configured as a Subscriber Module acting as a standalone radio or a high gain Access Point radio in a PTP architecture.

| Product | |
|--|---|
| MODEL NUMBER | 5 GHz: C050900C041B (ROW), C058900C042B (FCC), C050900C043B (EU) |
| Spectrum | |
| CHANNEL SPACING | Configurable on 5 MHz increments |
| FREQUENCY RANGE | 5 GHz 5150 – 5970 MHz (exact frequencies as allowed by local regulations) |
| CHANNEL WIDTH | 20 MHz or 40 MHz |
| Interface | |
| MAC (MEDIA ACCESS CONTROL) LAYER | Cambium Proprietary |
| PHYSICAL LAYER | 2x2 MIMO/OFDM |
| ETHERNET INTERFACE | 100 BaseT, Cambium PoE (V+ = pins 7 & 8, Return = pins 4 & 5) |
| PROTOCOLS USED | IPv4, UDP, TCP, IP, ICMP, SNMPv2c, HTTPs, FTP |
| NETWORK MANAGEMENT | HTTPs, FTP, SNMPv2c |
| VLAN | 802.1Q with 802.1p priority |
| Performance | |
| ARQ | Yes |
| NOMINAL RECEIVE SENSITIVITY (W/ FEC) @ 20MHZ CHANNEL | MCS1 = -90 dBm to MCS15 = -62 dBm (per branch) |
| NOMINAL RECEIVE SENSITIVITY (W/ FEC) @ 40MHZ CHANNEL | MCS1 = -87 dBm to MCS15 = -59 dBm (per branch) |
| MODULATION LEVELS (ADAPTIVE) | MCS1 (QPSK 1/2) to MCS15 (64QAM 5/6) |
| LATENCY (nominal, roundtrip) | 6 ms (Flexible Frame Mode) , 17 ms (GPS Sync Mode) |
| QUALITY OF SERVICE | Three level priority (Voice, High, Low) with packet classification by DSCP, COS, VLAN ID, IP & MAC Address, Broadcast, Multicast and Station Priority |
| TRANSMIT POWER RANGE | -17 to +30 dBm (combined, to regional EIRP limit) (1 dB interval) |
| Physical | |
| SURGE SUPPRESSION | 1 Joule Integrated |
| ENVIRONMENTAL | IP55 |
| TEMPERATURE | -30°C to +60°C (-22°F to +140°F) |
| WEIGHT | 4.1 kg (9 lbs) |
| WIND LOAD | 144 km/hour (90 mi/hour) |
| DIMENSIONS (DIA x DEPTH) | 47 cm x 27 cm (18.5 in x 10.6 in) |
| POLE DIAMETER RANGE | 5.7 cm - 7.6 cm (2.25 in - 3 in) |
| POWER CONSUMPTION | 7 W Maximum, 5 W Typical |
| INPUT VOLTAGE | 10 to 30 V |
| Security | |
| ENCRYPTION | 128-bit AES (CCMP mode) |
| Certifications | |
| FCCID | 5 GHz: Z8H89FT0006 |
| INDUSTRY CANADA CERT | 5 GHz: 109W-0006 |
| CE | 5 GHz: EN 302 502 v1.2.1 5 GHz: EN 301 893 v1.7.1 |

Notes:

C050900C041A (ROW) – consists of a ePMP Radio Module [C050900A021A/C050900P021A] and ePMP Dish Antenna [C050900D007B]

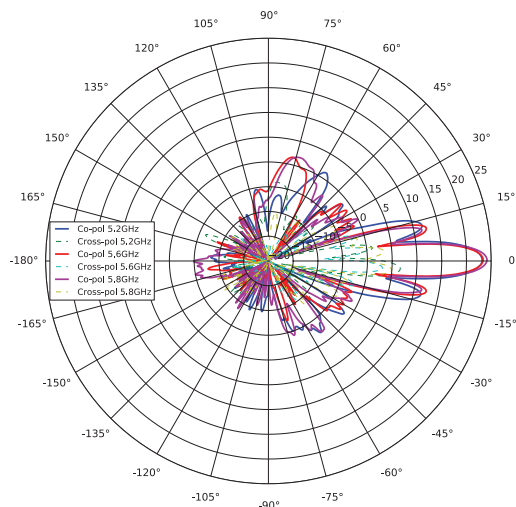
C058900C042A (FCC) – consists of a ePMP Radio Module [C058900A122A/C058900P122A] and ePMP Dish Antenna [C050900D007B]

C050900C043A (EU) – consists of a ePMP Radio Module [C050900A023A/C050900P023A] and ePMP Dish Antenna [C050900D007B]

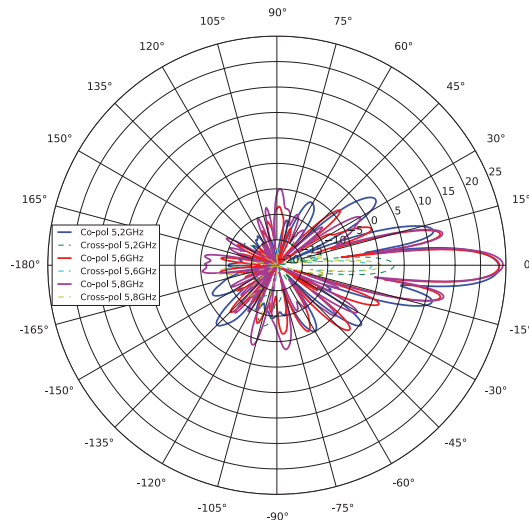
| ANTENNA SPECIFICATIONS | 5 GHz SPECIFICATION |
|-------------------------|---------------------|
| FREQUENCY RANGE | 5150 – 5970 MHz |
| ANTENNA TYPE | INTEGRATED |
| PEAK GAIN | 25 dBi |
| 3dB BEAMWIDTH-AZIMUTH | 7° |
| 3dB BEAMWIDTH-ELEVATION | 7° |
| FRONT-TO-BACK ISOLATION | >25 dB |
| CROSS POLARIZATION | >15 dB |

ePMP Force 110 Azimuth Patterns

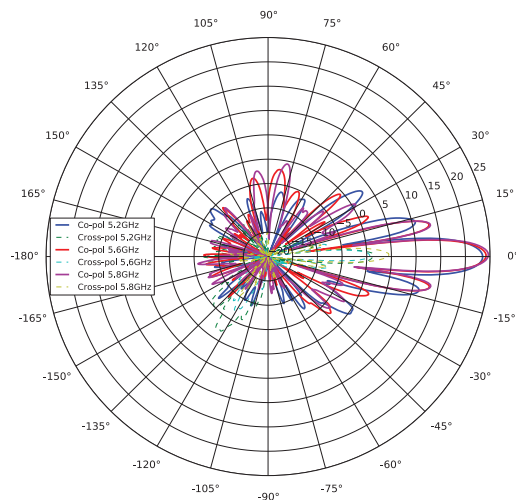
H-POL ELEVATION GAIN (dBi) FOR ZERO
AZIMUTH



H-POL AZIMUTH GAIN (dBi) FOR ZERO
ELEVATION



V-POL ELEVATION GAIN (dBi) FOR ZERO
AZIMUTH



V-POL AZIMUTH GAIN (dBi) FOR ZERO
ELEVATION

